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Number 32

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OFFICE OF NAVAL INTELLIGENCE, U.S. NAVY DEPARTMENT

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W A S H I N G T O N D O C U M E N T C E N T E R

T R A N S L A T I O N

Number 32 23 Sep 1946

RED ARMY SPECIAL TRANSPORTATION EQUIPMENT

ISSUED UNDER THE JOINT AUSPICES
OF
THE INTELLIGENCE DIVISION, W D G S
AND
OFFICE OF NAVAL INTELLIGENCE, U.S. NAVY DEPARTMENT

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SUMMARY OF CONTENTS

Red Army Special Transportation Equipment
(WDC No 261461)

This is an extract translation from a document entitled "Table of Special Transportation Equipment of Various Foreign Armies (Excluding the German Army)," issued 10 May 1944 by Army Ordnance Administrative Headquarters. The document consists of printed tables showing various pieces of special transportation equipment designed by foreign armies for use in special weather conditions and for the facilitation of transportation over difficult terrain. The tables are illustrated with photographs and diagrams.

The sections translated in full in this publication are those dealing with Red Army equipment.

Pages 1 through 11

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EXTRACT TRANSLATION

RED ARMY SPECIAL TRANSPORTATION EQUIPMENT

Army Ordnance Administrative Headquarters,
10 May 1944

(Editor's Note: This is an extract translation from a document entitled "Table of Special Transportation Equipment of Various Foreign Armies (Excluding the German Army)." Only the sections dealing with Red Army equipment are covered in this translation. The table of contents given below covers only the sections translated.)

TABLE OF CONTENTS

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I. Swamp-crossing Equipment

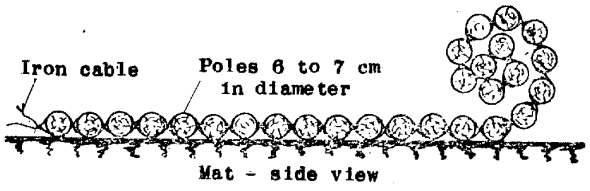
A. Folding-type Swamp Board (Mat)

1. Pole-type Swamp Board

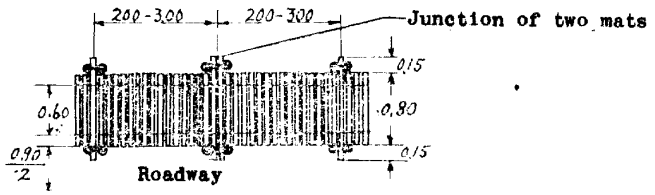
Poles 80 cm in length and 6 to 7 cm in diameter are connected by 4-strand soft iron cable. The connection is made by twisting the soft cable about each pole. The poles are spaced 1 to 2 cm apart. One roll is 8 m long.

2. Plank-type Swamp Board

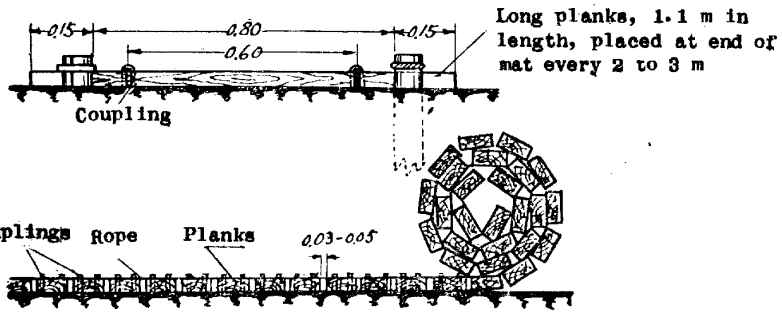
Planks 80 cm long, 20 cm wide, and 4 to 7 cm thick are arranged with 3 to 5 cm spaces between them. Planks are joined by means of a rope 5 mm in diameter. One roll is 6 to 10 m long.



Mat - side view



Bird's-eye view of mats in position



B. Pole-type Auxiliary Endless Traction Tread

Poles of 3 to 4.5 cm diameter are cut into lengths of 60 to 70 cm and joined by means of wire. Hard woods such as birch, oak, etc. are used for poles as much as possible. Speed of tank having this track is about 5 km p h through swamp.

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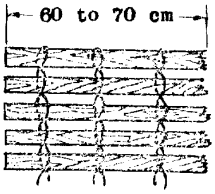


C. Plank-type Road Surface

This track is constructed with prefabricated planks which have been transported to the area where the track is to be laid.
The size of a typical plank section is given in the following table:

Type	Length (m)	Width (m)	Weight (kg)	Foundation Planks Space between (cm)	Number
3-meter plank section	3.22	0.66	82	70	5
4-meter plank section	4.22	0.66	110	63	7

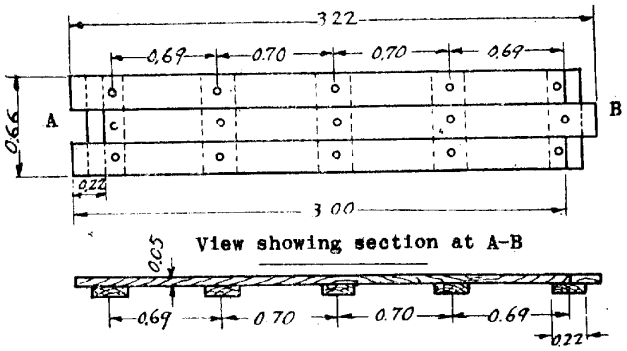
Plank measurements:

Type	Length (m)	Width (cm)	Thickness (cm)
3-meter plank section	3.0	22	5
4-meter plank section	4.0	22	5

3-meter plank sections are suitable for passage of 1.5-ton vehicles.

4-meter plank sections are suitable for passage of 3-ton vehicles.

On the inside of the plank section a guard rail for wheels is constructed of planks or logs. These guard rails are firmly fixed with stakes 7 to 10 cm in diameter and 0.6 to 0.8 m in length.



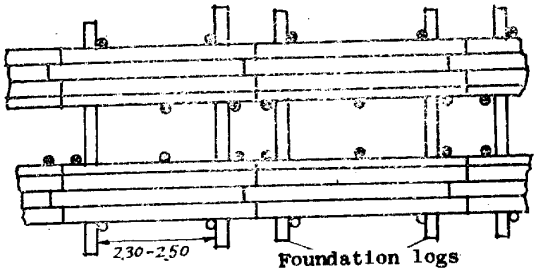
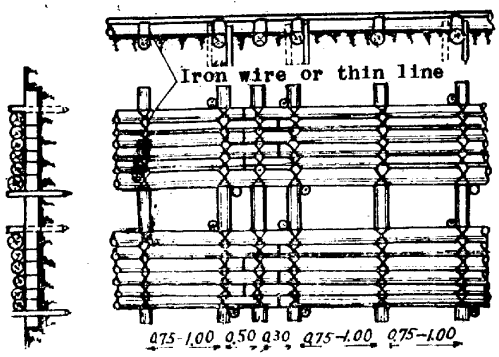


Illustration showing 3-m plank section in place

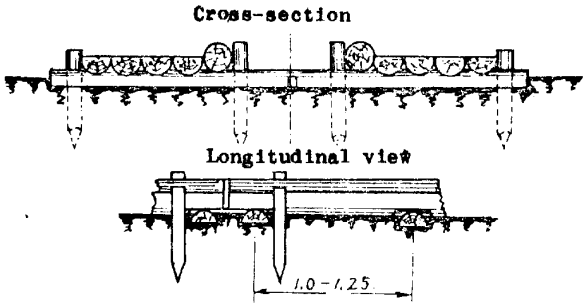
D. Pole-type Vehicular Road Surface

Poles are laid on top of the foundation logs, which consist of logs laid transversely at ground level. The ends of the poles are staggered and are placed near the foundation logs by iron wire or thin lines. On the inside of both tracks guard rails are constructed with logs.



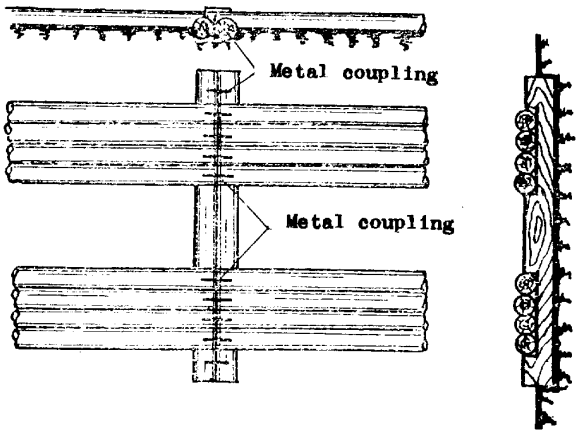
E. Split-log-type Vehicular Roadway

Split logs are laid longitudinally to form a roadway on top of a foundation of split logs or whole logs which have been laid transversely spaced 1 to 1.25 m apart at ground level. The longitudinal split logs are placed with their smooth sides face up. Each split log is secured to each foundation board by one nail. Two transverse foundation boards are placed beneath each junction of two split logs. On the inside of each track, guard rails are constructed of logs.



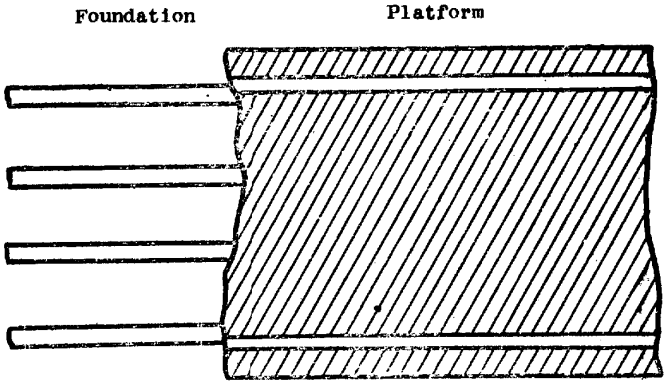
F. Log-type Vehicular Roadway

Ends of the logs are placed on top of two foundation logs which are common to both tracks. These are laid along the roadway. When logs are less than 20 cm in diameter, foundation logs are also placed under the center of the logs. In order to prevent slipping of the logs in a crosswise direction, a groove with a depth of one-half the diameter of the log is cut in the foundation log. The joints are made fast by metal coupling.



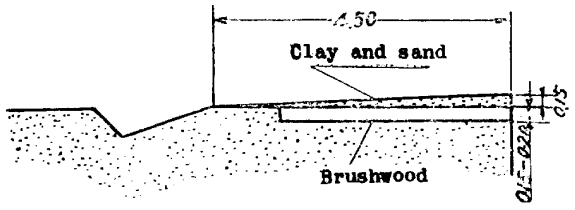
G. Oblique-log Roadway

This method is to fit logs together at an angle of 60 degrees to the direction of the roadway. Vehicles can run at a speed of 25 to 30 km p h without both wheels being subjected to simultaneous shock. When logs 10 to 12 m in length are available, a roadway for two-way traffic is constructed. When logs 5 to 6 m in length are obtained, a one-way traffic road is constructed.



H. Brushwood Roadway

A brushwood surface is used temporarily to strengthen certain types of roads (such as roads for marching columns of troops, etc.) which do not carry traffic of great weight. First, a layer of brushwood 15 to 20 cm thick is spread on the road after leveling its surface. On top of this a thin layer of damp clay is spread and hardened by packing. Then sandy soil or sand 10 to 15 cm deep is laid on and packed down. Next it is hardened by packing, or leveled with a roller. When using brushwood to strengthen the sandy soil, lay the brushwood across the roadway so as to form a layer 15 to 20 cm thick in a prepared cut. On top of this spread sandy soil; or when this is not available, sand to a depth of 15 cm.



Improvement of the sandy road with brushwood surface

I. Swamp-crossing Foot Floats

These are rubber foot floats 2 m in length, 20 cm high, and with a maximum width of 35 cm. Both ends are pointed. In order to prevent slipping, six scale-like rubber strips 15 cm long and 10 cm wide (with wires running to edge of the floats) are placed on the bottom of the floats at intervals of about 10 cm.

II. Ice-crossing Equipment

A. Reinforcement of Ice for Frozen River Crossing

Table of ice thickness necessary to bear various loads

	Total Weight (Metric Tons)	Axle Weight Rear	Axle Weight Front	Ice Thickness (Centimeters)	Distance between Vehicles (Meters)
Wheeled Vehicles	3.5	2.75	0.75	15	15
	6	4	2	20	20
	10	7	3	25	25
	15	10	5	30	30
Tracked Vehicles	3.5			15	15
	10			20	20
	12.5			25	25
	25			40	40
	45			50	50

When the thickness of the ice is not sufficient, the following methods are used to reinforce it.

1. Sprinkling Method

This is generally a plan to be used when the temperature is minus 8° or below. A nozzle is attached to the end of a pump hose. Water is sprinkled on the surface to be reinforced and it freezes rapidly. The extent of freezing according to tests is as follows:

Temperature	8° below	1 hr	4 cm
Temperature	12° below	1 hr	6 cm
Temperature	15° below	1 hr	8 cm

2. Inundation Method

Planks, logs, or snow, etc. are piled on the ice on both sides of the road to be crossed in order to construct a sort of water trough. Water is introduced with buckets, pumps, etc. One freezing will increase the thickness of the ice 2 to 3 cm. The operation is repeated until the required thickness is attained.

3. Ice-block Freezing Method

The snow is removed beforehand from the road to be crossed. Pieces of ice from 1.5 to 2 m square are cut out with a saw in a place at least 100 m distant. These blocks are transported to the locality to be reinforced. After the blocks have been arranged on the roadway, water is sprinkled on the pieces of ice so that they will freeze together and to the base of ice upon which they are laid. The strength of the ice is increased approximately 1.5 times by the use of these blocks. A defect of this method is the length of time required to lay the ice blocks.

4. A Method Which Utilizes Service-type Bridging Equipment

By use of bridge floor materials the load is widely distributed, thus compensating for the deficiency in ice thickness. Water is sprinkled, freezing the undersurface of the supports directly to the surface of the ice. This method is simple; but when the temperature is minus 8° or below, due to the great expenditure of time and energy for the transportation of materials, it is far more advantageous to use the ice-freezing method.

5. A Method by which a Pier is Constructed

Small holes are cut in the surface of the ice, and in these are placed poles to form a pier. The tops of the logs are cut so that they will be flush with the surface of the ice. Stringers are laid on top of these. The distance between supports is 4 to 6 m. In the intervals, parallel logs 5 to 7 m in length are placed transversely every 1 to 1.5 m. On top of the stringer and transverse logs, logs or squared timber are placed to form a roadway. The parallel stringers and transverse logs are frozen to the surface of the ice with water.

B. Crossing of Half-frozen Rivers

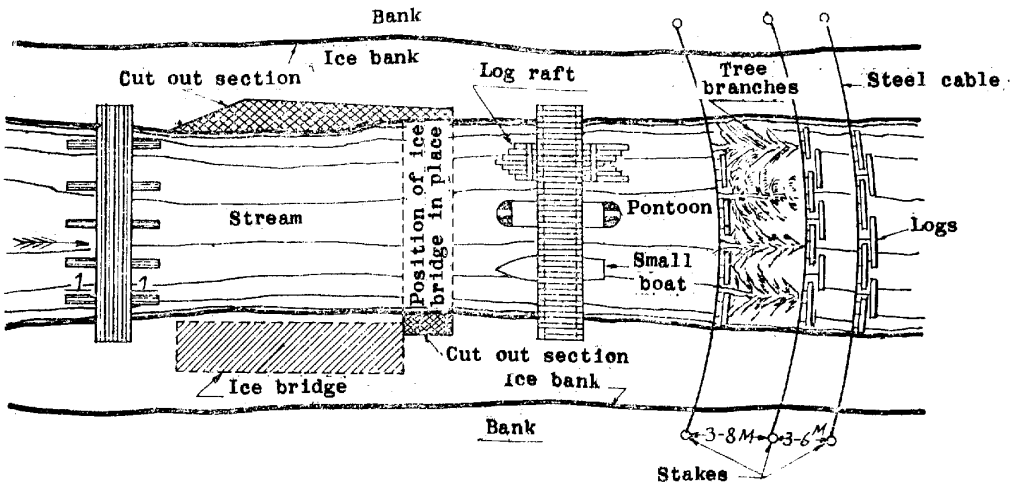
Swift-flowing rivers often freeze only at their banks while the central part of the stream does not freeze. Methods of crossing such places are as follows:

1. For crossing by one and two columns of infantry, a foot bridge of planks and logs with hand rail is constructed. The bridge is first supported on the ice of one shore and then is swung across to the opposite shore by utilizing the current.

2. After freezing and reinforcing the ice near the shore to the desired thickness, the ice is cut so that its length will be 6 to 10 m more than the width of the water to be crossed; then utilizing the speed of the current, the ice bridge is swung to the opposite shore.

3. A pontoon-bridge is erected utilizing materials at hand such as rafts, boats, barrels, etc. In winter it is very difficult to prevent freezing, especially when the crossings require a long period of time.

4. Steel cables are stretched across the river and to them are tied three branches or logs. This construction is allowed to freeze. One to two days are required for freezing.



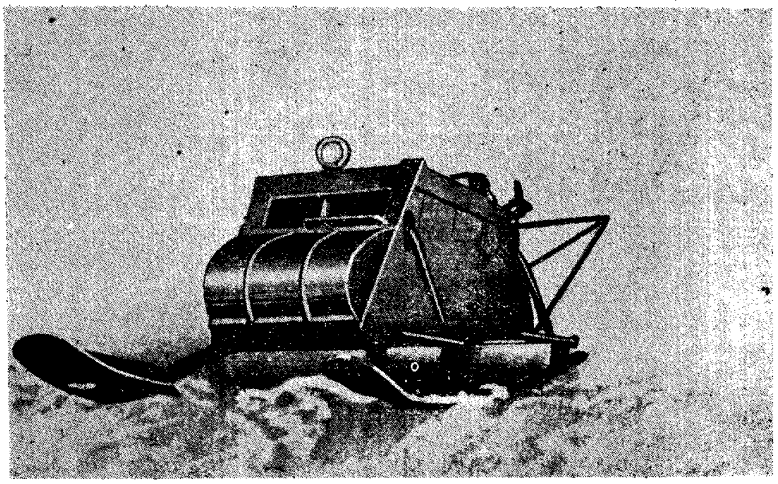
III. Snow-crossing Equipment

A. Propeller Sled

Used for the transportation of ammunition, casualties, etc., and patrolling, liaison, flank attacks, etc., in winter fighting. It is equipped with an aircraft-type engine at the rear of the hull and driven by a propeller. Although there are various types and models of the propeller sled, the following is one example:

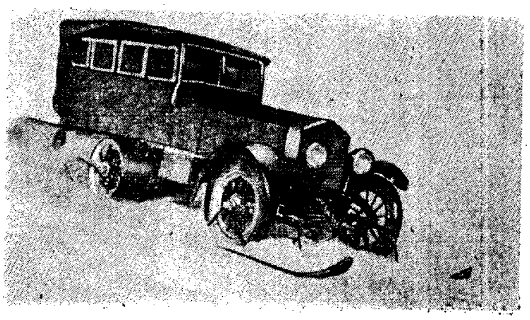
Measurements:

Length 5.5 m	Width 2 m	Height (to propeller tip) 2.76 m
Width of track 1.6 m	Clearance (without load) 32 cm	
Total Weight	1260 kg	
Speed	25 to 35 km p h	
Maximum speed on level ground	60 to 70 km p h	
Engine 90 to 95 hp	5-cylinder aircraft-type engine (air cooled)	
Propeller	Wood 240 cm diameter	
Armament	7.62 mm machine gun (1)	
Armor	Front, 8 mm	
Crew	2	



B. Automobile Sled

The half-track automobile sled can operate in snow drifts 50 cm in depth. Its speed, carrying a load of 500 to 600 kg is 25 km p h on unpacked snow and 40 km p h on roads. In emergencies, sled runners are usually attached to the front axle of the automobile and a supplementary axle and track are attached to the rear axle. This vehicle can travel over unpacked snow less than 30 cm deep.



C. Snowplow

1. Automobile Snowplow

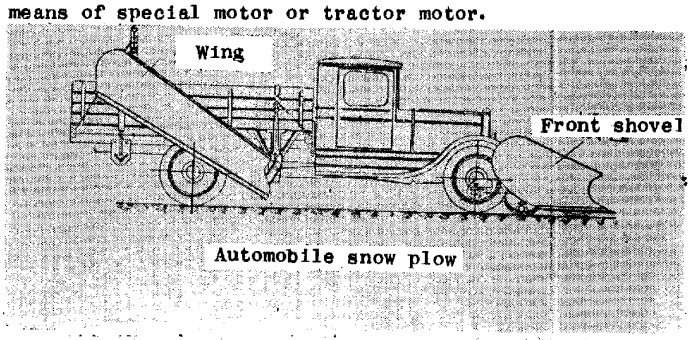
The front of the automobile is equipped with a triangular shovel and the sides with wings. The width of plowed track is 5.5 m and the plow moves with speed of 10 to 20 km p h. It requires 1.5 to 2 hrs to attach the snowplow equipment to the automobile. Although a 3-ton vehicle is ordinarily used, there are times when a 1.5-ton vehicle is used for light work.

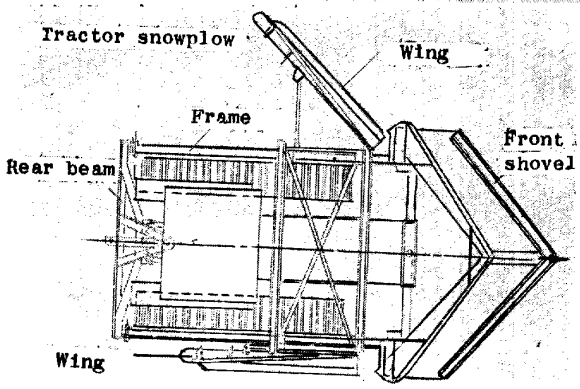
2. Tractor Snowplow

It is constructed with a triangular shovel and wings on both sides. Width of plowed track is approximately 6.5 m. If C h T Z model 65-hp Tractor is used, it is possible to plow through drifts up to 1.5 m deep.

3. Rotary-type Snowplow

Attached to C h T Z model 65-hp Tractor or Comintern Model 130-hp Tractor. It is propelled by means of special motor or tractor motor.

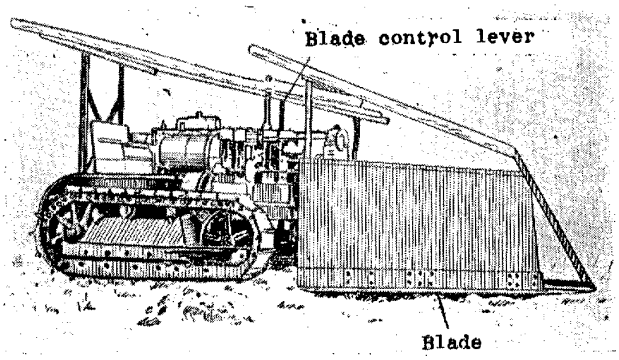




IV. Forest-traversing Equipment

A. Tree-felling Tractor

Used to fell trees up to 25 to 30 cm in diameter. The triangular blade which severs trees near their roots is propelled by a 60-hp tractor. This vehicle is able to clear 1000 sq m per hour. The felled trees are moved to either side by wooden beams on the tree-felling equipment.



B. Winch

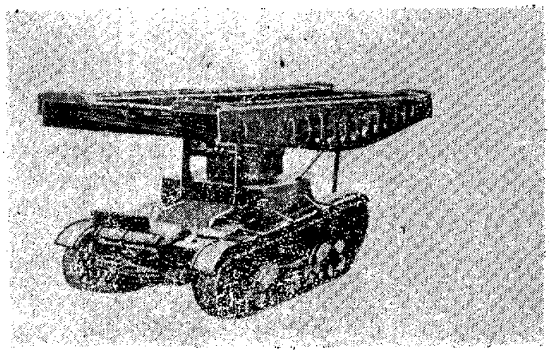
In order to uproot stumps more than 30 cm in diameter, a winch having two drums is used. It operates on the traction power of a tractor. This machine, operated by four men, can remove 12 stumps over 30 cm in diameter in 1 hour.

Besides this, there is a manually-operated winch which extracts 4 to 5 stumps up to 35 cm in diameter in 1 hr. When the stumps are less than 12 cm in diameter, they can be extracted by using a special shovel pulled by a tractor.

V. Ditch-crossing Equipment

A. Bridging Tank

In order to bridge small streams and ditches less than 6 m in width, so that vehicles of the light tank class can pass, two girders are carried on the tank turret or on either side of the tank. These girders are put in place by mechanical power. The one indicated in the illustration is a reconstruction of the turret of a Model T-26 Tank. A bridge floor is formed by pulling the two forward steel cables, with the forward support as the center of rotation.



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